

ABSTRACT

A rapid charging circuit for charging a power module is disclosed. The power module includes one or more ultracapacitors. The power module is charged using an energy source connected to the power module. The charging circuit includes a control circuit adapted to maintain a constant power level at the power module during charging as the voltage level across the power module increases. The control circuit includes a pulse-width modulator and an inductor connected in series with the power module. The pulse-width modulator can control a charge level of the inductor. The charge level may correspond to a current level which is in accordance with a desired power level at the power module and an instantaneous voltage level across the power module. The inductor may be adapted to limit a current level through the power module to a predetermined peak level. The control circuit may be adapted to provide a current level through the power module greater than a current level from said energy source during at least a portion of a charging period.